REMARKS

Claims 103-123 are pending in this application. Claims 109 and 115-120 were allowed. Claim 115 was objected to. Claims 103-108, 110-114 and 121-123 were rejected.

Allowed Claims

Applicants thank the Examiner for allowing claims 109 and 115-120

Claims Objected To

Claim 115 was objected to because of the following informality: there are two claims 115 and no claim 117. Applicant has corrected this informality.

Claim Rejections under 35 U.S.C. § 103

Claims 103-108, 110-114, and 121-123 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,768,913 to Molnar et al. (hereinafter "Molnar) and U.S. Patent 5,130,715 to Yanagisawa (hereinafter "Yanagisawa") in view of U.S. Patent 6,104,930 to Wardet al. (hereinafter"Ward"). This rejection is respectfully traversed.

To establish a prima facie case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. "The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicants' disclosure." In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicants respectfully submit that a prima facie case of obviousness has not been established regarding claims 103-108, 110-114, and 121-123 because the prior art cited does not teach or suggest all the claim limitations. Specifically, the cited prior art does not disclose or suggest the limitation "maintaining a communication channel between a first station and a second station using the one or more tracking beams" as found in Applicants' invention.

Molnar discloses a method and apparatus for performing beam searching in a radio communications system. (Title) A base station uses a fixed beam phased array

antenna which employs a first set and beams and associated hardware for conducting communication with a set of mobile terminals within a radio communications network, and employs a second set of beam and associated hardware for searching the radio communication cell for the presence of candidate beams which should be added to the first set of beams. (Col. 3, lines 45-53) The antenna may also be an adaptive phased array antenna. (Col. 4, line 32) The use of an adaptive beamforming processor allows the base station to selectively direct only the required number of beams toward the target terminals. (Col. 11, lines 44-46) Only one searcher beam is used, or at least a smaller subset of searcher beams is used. The single searcher beam is steered over a range of orientations. At each orientation, the base station measures the signal strength and/or quality of the searcher beam and from this information determines whether that orientation should be allocated a decoder beam. (Col. 11, lines 50-58) The decoder beams do not track the mobile station, rather, the mobile station moves from beam to beam. (Fig. 7).

Molnar does not disclose all the elements of Applicants' invention. Specifically, Molnar does not teach "receiving a first signal from the second station while searching for one or more additional signals using the one or more search beams". In the Final Office Action the Examiner also states that Molnar does not teach this limitation.

The Examiner states "Molnar teaches a method of communication (figure 7 and its description), comprising: forming a multiple beam pattern comprising one or more beams and one or more search beams; and maintaining a communication channel between a first station and a second station using the one or more beams including receiving a first signal from the second station (780) while searching for one or more additional signal using the one or more search beam (col. 11, line 40-col. 12, line 11, searching S beam). Molnar fails to teach the tracking beam. Yanagisawa teaches the tracking beam" Applicants respectfully submit that Yanagisawa does not teach or suggest "maintaining a communication channel between a first station and a second station using the one or more tracking beams" for the reasons given below.

Yanagisawa discloses a method of managing beams transmitted and received by a plurality of phased array antennas. (Abstract) An object of Yanagisawa is to provide a beam management method which enables simultaneous searching and tracking operations

to be performed by respective PAAs to obtain excellent radar performance. (Col. 2, lines 37-40) In a tracking mode, dividing targets tracked by the phased array antenna apparatuses to a plurality of groups on the basis of the pulse repetition rate, and then calculating, for the respective divided groups, transmission timings of tracking pulses to be sent from the phased array antenna apparatuses using ranges of the targets belonging to the respective groups so that one phased array antenna apparatus does not transmit the tracking pulse at the time when another phased array antenna apparatus is in a receiving operation. (Col. 2, lines 54-64)

Applicants submit that Yanagisawa also does not teach or disclose "maintaining a communication channel between a first station and a second station using the one or more tracking beams" because Yanagisawa does not communicate with the targets tracked by the radar system. Yanagisawa discloses a method for reducing interference by conducting radar target search and tracking operations to avoid interference in the phased array antennas. In addition, Applicants note that the Examiner has provided no specific citation, effectively citing Yanagisawa in its entirety. The Applicants point out that the Examiner's failure to indicate the particular portion of Yanagisawa that he believes teach or suggest the limitation makes it difficult for the Applicants to respond to the rejection with specificity. For example, it is not clear which of the 8 figures and 10 columns of text are believed by the Examiner to teach the tracking beam. The need for such specificity is made clear in both the M.P.E.P. and the patent rules and regulations. (M.P.E.P. § 706, "The goal of examination is to clearly articulate any rejection early in the prosecution process so that the Applicant has the opportunity to provide evidence of patentability and otherwise reply completely at the earliest opportunity;" 37 CFR 1.104(c)(2), "When a reference is complex or shows or describes invention other than that claimed by the Applicant, the particular part relied on must be designated as early as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specificed.") Despite diligent study of the Yanagisawa reference, Applicants are unable to find any teaching or suggestion of "maintaining a communication channel between a first station and a second station using the one or more tracking beams" found in claim 103. Applicants submit that Yanagisawa does not teach or suggest the stated limitation.

In addition, Applicants also submit that Ward does not teach or suggest the limitation "maintaining a communication channel between a first station and a second station using the one or more tracking beams". Ward is directed to a method for a floating transceiver assignment for cellular radio. (Title) A frequency allocation method for allocating frequencies to a plurality of fixed beams in a cellular radio based transceiver station comprises maintaining a reserve pool of carrier frequencies, such that any available carrier frequency can be allocated to any fixed beam at any one time in order to deal with capacity demands from mobile stations within an area covered by a fixed beam. A frequency allocation algorithm operates so as to allow a plurality of transceivers to float anywhere across a plurality of fixed directional beams. (Abstract) The Examiner states that "Ward teaches maintaining a communication channel between a first station and a second station using the one or more beams (col. 10, lines 39-63). The cited portion reads as follows:

> Referring to FIG. 10 herein, a process operated by the monitoring unit and control unit to monitor the carrier frequencies assigned to beams, the occupancy of those carrier frequencies assigned by communications signals, and the switching of carrier frequencies and channels to beams is described in general overview. In the best mode herein the process is implemented as an algorithm carried out by a process comprising the monitor unit 804 and control unit 805. In step 1000, there is maintained a pool of allowable carrier frequencies which are available for use on beams. These are carrier frequencies which are currently unassigned to any radiation beam and are held in reserve in order to be allocated to beams to fulfill user demand from mobile stations. In step 1001, the monitoring unit 804 monitors communications calls on each beam of the antenna, and maintains data concerning the number of carrier frequencies on each beam, and the occupancy of the communications channels comprising those carrier frequencies. Depending upon the number of incoming calls monitored on the uplink, in step 1002 individual carrier frequencies are allocated to each beam on the uplink and downlink beams having zones corresponding to those mobile station demanding communications calls. Carrier frequencies which are selected for allocation to beams may be selected from the pool on a random basis.

Ward teaches that the beams are fixed, in direct contradiction to Applicants' disclosure. In fact, according to the cited portion of Ward, Ward assigns frequencies on an as-needed basis to mobile units that move from one fixed beam to another. Therefore, Applicants

respectfully submit that Ward does not teach or suggest the limitation "maintaining a communication channel between a first station and a second station using the one or more tracking beams".

In addition, there is no motivation to combine the Molnar, Yanagisawa, and Ward references. Molnar is specifically directed to mobile communications, while Yanagisawa is directed to a phased array radar system, and Ward is directed to allocating frequencies for use on fixed antenna beams. Combining Molnar, Yanagisawa, and Ward would result in a system that utilizes the method of Molnar with the radar system of Yanagisawa and allocates frequencies according to the algorithm of Ward.. Under this combination, the mobile stations would be tracked through the system but would not maintain a communication channel and would be assigned a number of different frequencies.

The Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Yanagisawa and Ward into the system of Molnar in order to avoid interference in a radio communication system. The Applicants respectfully submit that the requirement that there must be some suggestion or motivation to modify the reference or to combine reference teachings is not met by the Examiner's assertion. The Examiner's statement, standing alone, is conclusory and the Examiner fails to indicate any basis, either in the references or in the knowledge generally available to a person of ordinary skill, for suggesting or motivating modification of the teachings of Molnar with the teachings of Yanagisawa and Ward. If the Examiner disagrees, the Applicants respectfully request that the Examiner provide the specific disclosure of the references, or examples within the general knowledge of a person of ordinary skill in the art, that would suggest or motivate the modification of Molnar as suggested by the Examiner. Absent such a showing, the first criterion of M.P.E.P. § 2143 is not met. Accordingly, the Examiner has failed to make a prima facie case of obviousness, and the rejection of claim 103 under 35 U.S.C. § 103(a) is improper.

Claims 104-108 are each allowable as depending directly from an allowable independent claim.

Claim 110 is allowable for the same reasons given above for claim 103.

Claim 111 is allowable as depending directly from an allowable independent claim.

Claim 112 is allowable as depending directly from an allowable independent claim.

Claim 113 is allowable as depending directly from an allowable independent claim.

Claim 114 is allowable as depending directly from an allowable independent claim.

Claim 115 is allowable as depending directly from an allowable independent claim.

Claim 121 is allowable for the same reasons given above for claim 103.

Claim 122 is allowable for the same reasons given above for claim 103.

Claim 123 is allowable for the same reasons given above for claim 103.

REQUEST FOR ALLOWANCE

In view of the foregoing, Applicants respectfully submit that all pending claims in the present invention are in a condition for allowance, which is earnestly solicited. Should any issues remain unresolved, the Examiner is encouraged to telephone the undersigned at the number provided below.

Respectfully submitted,

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